Commercial RADIO OPERATOR'S

QUESTION and ANSWER LICENSE GUIDE

FOR ELEMENTS 1, 2 & 9

INCLUDES

SAMPLE FCC TYPE PRACTICE EXAMS

Using MULTIPLE-CHOICE QUESTIONS

PREPARATION
FOR
RADIOTELEPHONE
AND
RADIOTELEGRAPH
LICENSE
EXAMINATIONS

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COMMERCIAL RADIO OPERATOR'S LICENSE GUIDE – ELEMENTS 1, 2 & 9

by

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COMMERCIAL RADIO OPERATOR'S LICENSE GUIDE — ELEMENTS 1-2 & 9

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PREFACE

The AMECO COMMERCIAL RADIO OPERATOR'S LICENSE GUIDE - ELEMENTS 1, 2 and 9 has been prepared to meet the growing demand for a concise, yet complete study guide for the first, second and ninth elements of the Federal Communications Commission's Commercial Radio Operator's Examination. It has been compiled in full accordance with the latest FCC Study Guide Revisions, and is therefore the most complete, thoroughly up to date guide available.

An additional feature of this guide is the inclusion of a separate section devoted to sample FCC type examinations covering Commercial Elements 1, 2 and 9. These sample tests consist of multiple choice questions, because this type of question is currently used by the Federal Communications Commission on all of the Commercial Radio Operator's examinations. Aside from providing valuable study practice, these sample examinations may be used as an accurate gauge of preparedness; when the student is capable of answering the various questions correctly, he is then prepared to take the actual examination.

The satisfactory completion of an examination covering Elements 1 and 2 fulfills the governmental requirements for obtaining a Radiotelephone 3rd Class Permit. In addition to Elements 1 and 2, Element 9 is required for a Radiotelephone 3rd Class Permit with endorsement for broadcast use. For other licenses and permits, there are further requirements; however, Elements 1 and 2 must be completed in all cases. The following are the requirements for the various classes of commercial radio operator's licenses and permits issued by the Federal Communications Commission:

Radiotelephone 1st Class Operator's License - Elements 1, 2, 3, 4.

Radiotelephone 2nd Class Operator's License - Elements 1, 2, 3.

Radiotelephone 3rd Class Operator's Permit - Elements 1, 2.

Radiotelephone 3rd Class Operator's Permit endorsed for broadcast operation - Elements 1, 2 and 9.

Radiotelegraph 1st Class Operator's License - Elements 1, 2, 5, 6.

Radiotelegraph 2nd Class Operator's License - Elements 1, 2, 5, 6.

Radiotelegraph 3rd Class Operator's Permit - Elements 1, 2, 5.

Aircraft Radiotelegraph Endorsement on 1st or 2nd Class License - Element 7.

Ship Radar Endorsement on Radiotelegraph or Radiotelephone 1st or 2nd Class License - Element 8.

The FCC examinations for Elements 1, 2 and 9 each consist of 20 multiple-choice questions similar to the examinations starting on page 33. 5% credit is allowed for each question answered correctly. 75% is the passing mark for each examination element.

Element 2 is subdivided so that the prospective operator may elect to answer either 20 questions in the maritime field (series M) or 20 questions of a general nature (Series O). Elements 1 and 9 each have only one group of questions.

Although this guide covers only Elements 1, 2 and 9 of the commercial radio operator examinations, the Ameco Publishing Corp. has published other guides covering some of the other elements of the commercial examinations. A license guide covering the requirements for the Radio Amateur Operator examinations has also been published.

You will note that there are abbreviations after most of the questions. These abbreviations refer to the rule on law that the question pertains to. The meanings of the abbreviations are as follows:

Sec.	Refers to a section of the Communications Act of 1934.
Art.	Refers to an article of the International Radio Regulations (Atlantic City 1947).
R&R	Refers to a provision of the Rules and Regulations of the FCC.

Booklets containing the various laws and treaties may be obtained from the Superintendent of Documents, U. S. Printing Office, Washington 25, D. C.

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ELEMENT 1
SERIES "O" AND "M"

Question 1. Where and how are FCC licenses and permits obtained? (R&R 13.11(a))

Answer 1. An operator's license or permit may be obtained by applying for a specific license at a regional office of the Federal Communications Commission. An examination must then be taken by the applicant, and if the examination is completed satisfactorily, a license is then issued to the applicant. An applicant for a restricted radiotelephone permit must fill out an application, but he is not required to take an examination.

Q. 2. When a licensee qualifies for a higher grade of FCC license or permit, what happens to the lesser grade license? (R&R 13.26)

A. 2. If the holder of a license qualifies for a higher class in the same group, the license held will be cancelled upon the issuance of the new license. Similarly, if the holder of a restricted operator permit qualifies for a first- or second-class operator license of the corresponding type, the permit held will be cancelled upon issuance of the new license.

Q. 3. Who may apply for an FCC license? (R&R 13.5(a))

A. 3. Normally, commercial licenses are issued only to citizens and other nationals of the United States. As an exception, in the case of an alien who holds an Aircraft Pilot Certificate issued by the Civil Aeronautics Administration or the Federal Aviation Agency and is lawfully in the United States, the Commission, if it finds that the public interest will be served thereby, may waive the requirement of the U. S. nationality.

Q. 4. If a license or permit is lost what action must be taken by the operator? (R & R 13.71, 13.72)

A. 4. He must immediately notify the FCC, and may then apply for a duplicate license. He must inform the Federal Communications Commission of the circumstances surrounding the loss of the original license, or how said license was destroyed. He must state that a reasonable search has been made for the original license, and that if it is found subsequent to the issuance of a duplicate, he will return either the original or the duplicate to the FCC for cancellation. He also must submit documentary evidence of the service performed under the original license.

Pending receipt of the duplicate license, the operator may operate the station, but he must exhibit a signed copy of the application for the duplicate license.

Q. 5. What is the usual license term for radio operators? (R & R 13.4(a))

A. 5. Commercial operator licenses will normally be issued for a term of five years from the date of issuance.

Q. 6. What government agency inspects radio stations in the U.S.? (Sec. 303(n))

A. 6. The Federal Communications Commission.

Q. 7. When may a license be renewed? (R&R 13.11)

A. 7. At any time during the final year of the license term or during a one-year period of grace after the date of expiration of the license sought to be renewed. During this one-year period of grace, an expired license is not valid.

Q. 8. Who keeps the station logs? (R&R 3.111)

A. 8. Each log shall be kept by the person or persons competent to do so, having actual knowledge of the facts required.

Q. 9. Who corrects errors in the station logs? (R&R 3.111)

A. 9. Any necessary correction may be made only by the person originating the entry.

Q. 10. How may errors in the station logs be corrected? (R & R 3.111)

A. 10. Any necessary correction may be made only by the person originating the entry who shall strike out the erroneous portion, initial the correction made, and indicate the date of correction.

Q. 11. Under what conditions may messages be rebroadcast? (Sec. 325(a))

A. 11. Messages may be rebroadcast only with the express authority of the originating station.

Q. 12. What messages and signals may not be transmitted? (R & R 13.66, 13.67, 13.68)

A. 12. No licensed radio operator shall transmit unnecessary, unidentified, or superfluous radio communications or signals. Neither shall he transmit communications containing obscene, indecent or profane words, language, or meaning. A licensed radio operator is prohibited from transmitting false or deceptive signals or communications by radio, or any call letter or signal which has not been assigned by proper authority to the radio station he is operating.

Q. 13. May an operator deliberately interfere with any radio communication or signal? (R & R 13.69)

A. 13. No.

Q. 14. What type of communication has top priority in the mobile service? (ART.)

A. 14. Distress calls, distress messages and distress traffic have top priority in the mobile service. Urgent signals are next in the order of priority, followed by safety signals.

Q. 15. What are the grounds for suspension of operator licenses? (Sec. 303(m) (1))

A. 15. The FCC may suspend an operator license upon proof sufficient to satisfy the Commission that the licensee:

(a) Has violated any provision of any Act, treaty or convention binding on the United States, which the Commission is authorized to administer, or any regulation made by the Commission under any such Act, treaty, or convention; or

(b) Has failed to carry out a lawful order of the master or person lawfully in charge of the ship or aircraft on which he is employed; or

(c) Has willfully damaged or permitted radio apparatus or installations to be damaged; or

(d) Has transmitted superfluous radio communications or signals or communications containing profane or obscene words, language, or meaning, or has knowingly transmitted ---

(1) False or deceptive signals or communications, or
(2) A call signal or letter which has not been assigned by proper authority to the station he is operating; or

(e) Has willfully or maliciously interfered with any other radio communications or signals; or

(f) Has obtained or attempted to obtain, or has assisted another to obtain or attempt to obtain, an operator's license by fraudulent means.

Q. 16. When may an operator divulge the contents of an intercepted message? (Sec. 605)

A. 16. An operator may divulge the contents of an intercepted message if the message is for the use of the general public or relating to ships in distress.

Q. 17. If a licensee is notified that he has violated an FCC rule or provision of the Communications Act of 1934, what must he do? (R & R 1.76)

A. 17. Within 10 days from receipt of notice or such other period as may be specified, the licensee shall send a written answer, in duplicate, direct to the office of the Commission originating the official notice. If an answer cannot be sent nor an acknowledgment made within such 10-day period by reason of illness or other unavoidable circumstances, acknowledgment and answer shall be made at the earliest practicable date with a satisfactory explanation of the delay. The answer to each notice shall be complete in itself and shall not be abbreviated by reference to other communications or answers to other notices. In every instance, the answer shall contain a statement of action taken to correct the condition or omission complained of and to preclude its recurrence. In addition: (1) If the notice relates to violations that may be due to the physical or electrical characteristics of transmitting apparatus and any new apparatus is to be installed, the answer shall state the date such apparatus was ordered, the name of the manufacturer, and the promised date of delivery.

Q. 18. If a licensee receives a notice of suspension of his license, what must he do? (R & R 1.72)

A. 18. If a licensee receives a notice of suspension of his license, he must make a written application to the Commission within 15 days of receipt of the notice for a hearing on the suspension order.

Q. 19. What are the penalties provided for violating a provision of the Communications Act of 1934 or a Rule of the FCC? (Sec. 501, 502)

A. 19. Any person who willfully and knowingly violates the Communications Act of 1934 shall, upon conviction thereof, be punished for such offense, for which no penalty (other than a forfeiture) is provided in this Act, by a fine of not more than $10,000 or by imprisonment for a term not exceeding one year, or both; except that any person, having been once convicted of an offense punishable under this section, who is subsequently convicted of violating any provision of this Act punishable under this section, shall be punished by a fine of not more than $10,000 or by imprisonment for a term not exceeding two years; or both.

Any person who willfully and knowingly violates any rule, regulation or restriction made by the Commission under authority of this Act, or any rule, regulation or restriction made by any international communications treaty to which the United States is or may hereafter become a party, shall, in addition to any other penalties provided by law, be punished, upon conviction thereof, by a fine of not more than $500 for each and every day during which such offense occurs.

Q. 20. Define "harmful interference". (ART.)

A. 20. Harmful interference is any emission, radiation or induction which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radiocommunication service.

ELEMENT 2 — SERIES "O"

Ques. 1. What should an operator do when he leaves a transmitter unattended?

Ans. 1. Precautions should be taken so that the equipment will not be subjected to use by unauthorized personnel.

Q. 2. What are the meanings of: clear, out, over, roger, words twice, repeat, and break?

A. 2(a). "Clear" indicates that the transmission is completed, and that no response is expected.

(b) "Out" is similar in meaning to "clear". It indicates that the conversation is ended and no response is expected.

(c) "Over" indicates that the transmission has ended and a response is expected.

(d) "Roger" indicates that the immediately preceding message has been received, and is completely understood.

(e) "Words twice" is used to indicate that a series of words will be sent two times due to poor reception conditions or general communications difficulty.

(f) "Repeat" means to say again.

(g) The term "break" is used as a separation between parts of a single message.

Q. 3. How should a microphone be treated when used in noisy locations?

A. 3. It is good practice for the operator to shield the microphone with his hands when speaking into a microphone in a noisy location. This tends to cut down the microphone's picking up of background noise.

Q. 4. What may happen to the received signal when an operator has shouted into a microphone?

A. 4. Shouting into the microphone generally causes overmodulation. This results in speech distortion, as well as interference with stations on adjacent frequencies.

Q. 5. Why should radio transmitters be "off" when signals are not being transmitted?

A. 5. The transmitter should be off to prevent causing interference to other stations on the frequency.

Q. 6. Why should an operator use well-known words and phrases?

A. 6. Simple phrases and plain language are easier to understand. This reduces the number of errors that are made, and minimizes the amount of repetition necessary.

Q. 7. Why is the station's call sign transmitted?

A. 7. A station's call sign is transmitted so as to enable one to identify the station and thus avoid possible confusion. A proper station identification consists of the call letters and location of the station.

Q. 8. Where does an operator find specifications for obstruction marking and lighting (where required) for the antenna towers of a particular radio station?

A. 8. If an operator wishes to determine the specifications for obstruction marking and lighting of antenna towers, he should look in Part 17 of the Rules and Regulations of the FCC. If he wishes to determine the specifications for a particular station, he should examine the station authorization issued by the Commission.

Q. 9. What should an operator do if he hears profanity being used at his station?

A. 9. The licensed operator on duty should endeavor to end the transmission and should enter the relevant details in the log of the station. A report of the incident should be submitted to the FCC.

Q. 10. What should an operator do if the station he is calling does not answer within a reasonable length of time?

A. 10. He should stop calling and wait a reasonable length of time before attempting to call again. Continuous calling without results only causes interference and takes up valuable airways space that could be used by others.

Q. 11. When may an operator use his station without regard to certain provisions of his station license? (R & R 2.405)

A. 11. The licensee of any station, except amateur, may, during a period of emergency in which normal communication facilities are disrupted as a result of hurricane, flood, earthquake or similar disaster, utilize such station for emergency communication service in communicating in a manner other than that specified in the instrument of authorization: Provided: (a) That as soon as possible after the beginning of such emergency use, notice be sent to the Commission at Washington, D. C., and to the Engineer in Charge of the district in which the station is located, stating the nature of the emergency and the use to which the station is being put, and (b) That the emergency use of the station shall be discontinued as soon as substantially normal communication facilities are again available, and (c) That the Commission at Washington, D. C., and the Engineer in Charge shall be notified immediately when such special use of the station is terminated.

Q. 12. Who bears the responsibility if an operator permits an unlicensed person to speak over his station?

A. 12. When a licensed operator in charge of a radiotelephone station permits another person to use the microphone and talk over the facilities of the station, he should remember that he continues to bear the responsibility for the proper operation of the station.

Q. 13. What is meant by a "phonetic alphabet" in radiotelephone communications?

A. 13. A phonetic alphabet is one in which a specific word is used to represent a letter of the alphabet; each letter has its corresponding word. For instance, the letter "A" may be made more easily recognizable by means of the word "Able", the word "Baker" is used to signify the letter "B", and the letter "C" is distinguished by use of the word "Charlie". By using one of the established phonetic symbols, the transmitting station makes clear to the receiving station exactly what letter is meant. This cuts down greatly on the amount of confusion and error, since many letters of the alphabet are similar in sound and may easily be confused.

Q. 14. How does the licensed operator of a station normally exhibit his authority to operate the station?

A. 14. An operator normally exhibits his authority to operate a station by posting a valid operator license or permit at the transmitter control point.

Q. 15. What precautions should be observed in testing a station on the air?

A. 15. In testing a radiotelephone transmitter, the operator should clearly indicate that he is testing, and the station call sign or name of the station, as required by the rules, should be clearly given. Tests should be as brief as possible. Caution should be observed by persons testing a station to make certain their test message will not interfere with other communications in progress on the same channel. Testing is important since it tells the operator whether the equipment is functioning properly. One of the primary duties of the operator is to maintain the equipment in proper operating condition.

ELEMENT 2—SERIES "M"

Ques. 1. What is the importance of the frequency 2182 Kc? (R & R 83.352, 83.353(a))

Ans. 1. The frequency 2182 Kc. is the international distress frequency for radiotelephony. It shall be used for this purpose by ship, aircraft, and survival craft stations using frequencies in the authorized bands between 1605 and 4000 kc. when requesting assistance from the maritime services. The frequency 2182 Kc. is also the international general radiotelephone calling frequency for the maritime mobile service. It may be used as a carrier frequency for this purpose by ship stations and aircraft stations operating in the maritime mobile service.

Q. 2. Describe completely what actions should be taken by a radio operator who hears: (a) a distress message; (b) a safety message? (R & R 83.239, 83.240, 83.241, 83.242)

A. 2(a). Stations of the maritime mobile service which receive a distress message from a mobile station which is, beyond any possible doubt, in their vicinity, shall immediately acknowledge receipt. However, in areas where reliable communication with one or more coast stations are practicable, ship stations may defer this acknowledgement for a short interval so that a coast station may acknowledge receipt.

Stations of the maritime mobile service which receive a distress message from a mobile station which, beyond any possible doubt, is not in their vicinity, shall allow a short interval of time to elapse before acknowledging receipt of the message, in order to permit stations nearer to the mobile station in distress to acknowledge receipt without interference.

The acknowledgment of receipt of a distress message is transmitted, when radiotelegraphy is used, in the following form:

(a) The call sign of the station sending the distress message, sent three times;

(b) The word DE;

(c) The call sign of the station acknowledging receipt, sent three times;

(d) The group RRR;

(e) The distress signal SOS.

The acknowledgment of receipt of a distress message is transmitted, when radiotelephony is used, in the following form:

(a) The call sign or other identification of the station sending the distress message, spoken three times;

(b) The words THIS IS;

(c) The call sign or other identification of the station acknowledging receipt, spoken three times;

(d) The word RECEIVED;

(e) The distress signal MAYDAY.

Every mobile station which acknowledges receipt of a distress message shall, on the order of the master or person responsible for the ship, aircraft, or other vehicle carrying such mobile station, transmit as soon as possible the following information in the order shown:

(a) Its name;

(b) Its position;

(c) The speed at which it is proceeding towards, and the approximate time it will take to reach, the mobile station in distress.

Before sending this message, the station shall ensure that it will not interfere with the emissions of other stations better situated to render immediate assistance to the station in distress.

A mobile station or a land station which learns that a mobile station is in distress shall transmit a distress message in any of the following cases:

(a) When the station in distress is not itself in a position to transmit the distress message;

(b) When the master or person responsible for the ship, aircraft, or other vehicle not in distress, or the person responsible for the land station, considers that further help is necessary;

(c) When, although not in a position to render assistance, it has heard a distress message which has not been acknowledged. When a mobile station transmits a distress message under these conditions, it shall take all necessary steps to notify the authorities who may be able to render assistance.

The transmission of a distress message under the conditions prescribed in the above paragraph shall be made on either or both of the international distress frequencies (500 kc. radiotelegraph; 2182 kc. radiotelephone) or on any other available frequency on which attention might be attracted.

The transmission of the distress message shall always be preceded by the call indicated below, which shall itself be preceded whenever possible by the radiotelegraph or radiotelephone alarm signal. This call consists of:

When radiotelegraphy is used:
(a) The signal DDD SOS SOS SOS DDD;
(b) The word DE;
(c) The call sign of the transmitting station, sent three times;
When radiotelephony is used:
(a) The signal MAYDAY RELAY, spoken three times;
(b) The words THIS IS;
(c) The call sign or other identification of the transmitting station, spoken three times.

A. 2(b) All stations hearing the safety signal shall listen to the safety message until they are satisfied that the message is of no concern to them. They shall not make any transmission likely to interfere with the message. In the event that the message concerns them, they shall bring it to the attention of the master of the ship or whoever should receive the information.

Q. 3. What information must be contained in distress messages? What procedure should be followed by a radio operator in sending a distress message? What is a good choice of words to be used in sending a distress message? (R&R 83.234 through 83.238)

A. 3. The international radiotelegraph distress signal or call consists of the group "three dots, three dashes, three dots" (...---...), symbolized herein by SOS, transmitted as a single signal in which the dashes are slightly prolonged so as to be distinguished clearly from the dots.

The international radiotelephone distress signal consists of the word MAYDAY, pronounced as the French expression "m'aider".

These distress signals indicate that a mobile station is threatened by grave and imminent danger and requests immediate assistance.

The radiotelephone distress procedure shall consist of:
(a) The radiotelephone alarm signal (whenever possible);
(b) The distress call
(c) The distress message

The radiotelephone distress transmissions shall be made slowly and distinctly, each word being clearly pronounced to facilitate transcription.

After the transmission by radiotelephony of its distress message, the mobile station may be requested to transmit suitable signals followed by its call sign or name, to permit direction-finding stations to determine its position. This request may be repeated at frequent intervals if necessary.

The distress message, preceded by the distress call, shall be repeated at intervals until an answer is received. This repetition shall be preceded by the radiotelephone alarm signal whenever possible.

When the mobile station in distress receives no answer to a distress message transmitted on the distress frequency, the message may be repeated on any other available frequency on which attention might be attracted.

Q. 4. What are the requirements for keeping watch on 2182 Kc.? If a radio operator is required to "stand watch" on an international distress frequency, when may he stop listening?
(R & R 83.223)

A. 4. Each ship station on board a ship navigating the Great Lakes and licensed to transmit by telephony on one or more frequencies within the band 1600 to 3500 kcs. shall, during its hours of service for telephony, maintain an efficient watch for the reception of class A3 emission on the radio-channel of which 2182 Kcs. is the assigned frequency, whenever the station is not being used for transmission on that channel or for communication on other radio-channels.

Except for stations on board vessels required by law to be fitted with radiotelegraph equipment, each ship station (in addition to those ship stations specified above) licensed to transmit by telephony on one or more frequencies within the band 1600 to 3500 kcs. shall, during its hours of service for telephony, maintain an efficient watch for the reception of class A3 emission on the radio-channel of which 2182 kcs. is the assigned frequency, whenever such station is not being used for transmission on that channel or for communication on other radio-channels.

Q. 5. Under what circumstances may a coast station contact a land station by radio? (R & R 81.302(a) (2))

A. 5. A coast station may contact a land station for the purpose of facilitating the transmission or reception of safety communications to or from a ship or aircraft station.

Q. 6. What do distress, safety, and urgency signals indicate? What are the international urgency, safety, and distress signals? In the case of a mobile radio station in distress, what station is responsible for the control of distress message traffic?
(R & R 83.234 through 83.249)

A. 6. Distress signals indicate that a mobile station is threatened by grave and imminent danger and requests immediate assistance.

The safety signal indicates that the station is about to transmit a message concerning the safety of navigation or giving important meteorological warnings.

The urgency signal indicates that the transmitting station is about to transmit a message concerning the safety of a ship, aircraft or other vehicle, or of some person aboard, or within sight.

The international radiotelephone urgency signal consists of the word "PAN" repeated three times and transmitted before the call.

The international radiotelegraph urgency signal consists of the letters "X X X" spaced out as separate letters.

The international radiotelephone safety signal consists of the word "SECURITY" repeated three times and transmitted before the call. In radiotelegraphy, the safety signal consists of three repetitions of the group "TTT" transmitted before the call.

The international radiotelephone distress signal consists of the spoken word "MAYDAY" repeated three times and transmitted before the call. In radiotelegraphy, the international distress signal consists of the group "SOS" transmitted before the call.

The control of distress traffic is the responsibility of the mobile station in distress or of the station which, pursuant to 8.242(a), has sent the distress message. These stations may however, delegate the control of the distress traffic to another station.

Q. 7. In regions of heavy traffic why should an interval be left between radiotelephone calls? Why should a radio operator listen before transmitting on a shared channel? How long may a radio operator in the mobile service continue attempting to contact a station which does not answer? (R & R 83.366)

A. 7. In regions of heavy traffic an interval is left between radiotelephone calls in order to give other stations a chance to make their calls and also to prevent undue interference.

A radio operator should listen before transmitting on a shared channel so as not to interfere with communications already in progress.

If the called station is not heard to reply, that station shall not again be called until after an interval of two minutes. When a station called does not reply to a call sent three times at intervals of two minutes, the calling shall cease and shall not be renewed until after an interval of 15 minutes; however, if there is no reason to believe that harmful interference will be caused to other communications in progress, the call sent three times at intervals of two minutes may be repeated after a pause of not less than 3 minutes. In the event of an emergency involving safety, the provisions of this paragraph shall not apply.

Q. 8. Why are test transmissions sent? How often should they be sent? What is the proper way to send a test message? How often should the station's call sign be sent? (R & R 83.365)

A. 8. Test transmissions are made in order to make certain that the equipment is functioning properly. Regular tests may reveal defects or faults which, if corrected immediately, may prevent delays when communications are necessary.

Test signals shall have a duration not exceeding 10 seconds. Test transmissions shall not be repeated until a period of at least one minute has elapsed. A period of at least five minutes shall elapse before the test transmission is repeated on the frequency 2182 kcs. or 156.8 Mcs. in a region of heavy traffic.

The testing procedure should be as follows: The operator shall announce the word "testing" followed in the case of a voice transmission test by the count "1, 2, 3, 4 *** etc." or by test phrases or sentences not in conflict with normal operating signals. At the conclusion of the test, there shall be voice announcement of the official call sign of the testing station, the name of the ship on which the station is located, and the general location of the ship at the time the test is being made.

Q. 9. In the mobile service, why should radiotelephone messages be as brief as possible?

A. 9. Radiotelephone messages should be as brief as possible in order to prevent interference and to give others an opportunity to use the airways.

Q. 10. What are the meanings of: clear, out, over, roger, words twice, repeat and break?

A. 10. (a) "Clear" indicates that the transmission is completed and that no response is expected.

(b) "Out" is similar in meaning to "clear". It indicates that the conversation is ended and no response is expected.

(c) "Over" indicates that the transmission has ended and a response is indicated.

(d) "Roger" indicates that the immediately preceding message has been received, and is completely understood.

(e) "Words twice" is used to indicate that a series of words will be sent two times due to poor reception conditions or general communications difficulty.

(f) "Repeat" means to say again.

(g) The term "Break" is used as a separation between parts of a single message.

Q. 11. Does the Geneva, 1959 treaty give other countries the authority to inspect U.S. vessels? (Art. 21)

A. 11. If a mobile station visits a foreign country, the governments or proper administrations of the countries may examine the station license. The inspectors of the foreign countries shall have in their possession an identity card or badge issued by the competent authority which they shall show at the request of the master or persons responsible for the ship, aircraft or other vehicle carrying the mobile station.

When the station license cannot be produced or where manifest irregularities are observed, governments or administrations may inspect the radio installations in order to satisfy themselves that these conform to the conditions imposed by these regulations.

Q. 12. Why are call signs sent? Why should they be sent clearly and distinctly?

A. 12. Station identification should be made clearly and distinctly so that unnecessary repetition of call letters is avoided and to enable other stations to clearly identify all calls.

Q. 13. How does the licensed operator of a ship station exhibit his authority to operate a station? (R & R 83.156)

A. 13. The original license shall be posted in a conspicuous place at the principal location on board ship at which the station is operated: Provided, That in the case of stations of a portable nature, including marine-utility stations, or in the case where the operator holds a restricted radiotelephone operator permit, the operator may in lieu of posting have on his person either his required operator license or a duly issued verification card (FCC form 758-F) attesting to the existence of that license.

Q. 14. When may a coast station NOT charge for messages it is requested to handle? (R & R 81.179)

A. 14. No charge shall be made for the service of any public coast station unless effective tariffs applicable to such service are on file with the Commission.

No charge shall be made by any station in the maritime mobile service of the United States for the transmission of distress messages and replies thereto in connection with situations involving the safety of life and property at sea.

No charge shall be made by any station in the maritime mobile service of the United States for the transmission, receipt, or relay of the information concerning dangers to navigation, originating on a ship of the United States or of a foreign country.

Q. 15. What is the difference between calling and working frequencies? (R & R 83.6)

A. 15. A calling frequency is one where initial calls and initial replies to such calls are made. Most stations maintain a watch on those frequencies. After establishing communications on the call frequencies, the stations change to the working frequencies for the transmission of the actual messages.

ELEMENT 9
SERIES "O" AND "M"

Question 1. What is meant by the following words or phrases?
- (a) Standard broadcast station (R & R 73.1)
- (b) Standard broadcast band (R & R 73.1)
- (c) Standard broadcast channel (R & R 73.3)
- (d) FM station (R & R 73.310)
- (e) FM band (R & R 73.310)
- (f) Daytime (R & R 73.6)
- (g) Nighttime (R & R 73.7)
- (h) Broadcast day (R & R 73.9)
- (i) EBS (R & R 73.911)

Answer 1(a). The term "standard broadcast station" means a broadcasting station licensed for the transmission of radiotelephone emissions primarily intended to be received by the general public and operated on a channel in the band - 535 kilocycles to 1605 kilocycles.

(b) The term "standard broadcast band" means the band of frequencies between 535 kilocycles and 1605 kilocycles.

(c) The term "standard broadcast channel" means the band of frequencies occupied by the carrier and two side bands of a broadcast signal with the carrier frequency at the center. Channels shall be designated by their assigned carrier frequencies. The 107 carrier frequencies assigned to standard broadcast stations shall begin at 540 kilocycles and be in successive steps of 10 kilocycles.

(d) The term "FM station" means a station employing frequency modulation in the FM broadcast band and licensed primarily for the transmission of radiotelephone emissions intended to be received by the general public.

(e) The term "FM band" means the band of frequencies extending from 88 to 108 megacycles per second, which includes those assigned to noncommercial educational broadcasting.

(f) The term "daytime" means the period of time between the local sunrise and the local sunset.

(g) The term "nighttime" means the period of time between the local sunset and 12 midnight, local standard time.

(h) The term "broadcast day" means the period of time between local sunrise and 12 midnight, local standard time.

(i) "EBS" stands for Emergency Broadcast System. The Emergency Broadcast System consists of broadcast stations and interconnecting facilities which have been authorized by the Federal Communications Commission to operate in a controlled manner during a war, threat of war, state of public peril or disaster, or other national emergency.

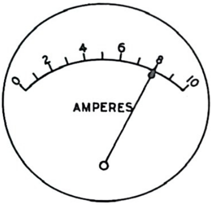
Q. 2. Make the following transformations: (a) Kilocycles to cycles. (b) Kilovolts to volts. (c) Milliamperes to amperes.

A. 2(a) In order to change kilocycles to cycles, we multiply by one thousand. In order to change cycles to kilocycles, we divide by one thousand.

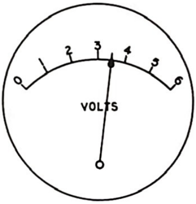
(b) In order to change kilovolts to volts, we multiply by one thousand. In order to change volts to kilovolts, we divide by one thousand.

(c) In order to change milliamperes to amperes, we divide by one thousand. In order to change amperes to milliamperes, we multiply by one thousand.

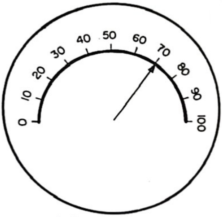
Q. 3. Draw the "face" of the following meters and know how to read each: (a) Ammeter (b) Voltmeter (c) Arbitrary scale meter (d) Frequency monitor meter (e) VU meter (for % modulation).


0
2
4
6
8
10
AMPERES

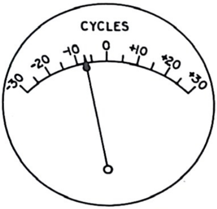
(a) Ammeter.
Reading shown
is 8 amperes.


0
2
3
4
5
6
VOLTS

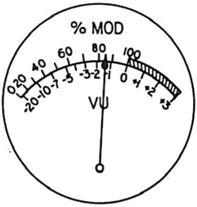
(b) Voltmeter.
Reading shown
is 3.5 volts.


0
10
20
30
40
50
60
70
80
90
100

(c) Arbitrary
scale meter.


CYCLES
-30
-20
-10
0
+10
+20
+30

(d) Frequency Monitor
Meter indicates deviation in
cycles. (KC for FM stations)
Reading shown is -7 cycles.


% MOD
0
20
40
60
80
100
-20
-10
-7
-5
-3
-2
-1
0
+1
+2
+3
VU

(e) VU Meter.
For % modulation, scale is
made larger than VU scale.
Reading shown is 85% mod.

Q. 4. What should an operator do if the remote antenna ammeter becomes defective? (R & R 73.58)

A. If the remote antenna ammeter becomes defective, the antenna base currents may be read and logged once daily for each mode of operation, pending the return to service of the regular remote meter.

Q. 5. What should an operator do if the remote control devices at a station so equipped malfunction? (R & R 73.67)

A. If the remote control devices at a station malfunction, the operator should cease operating by remote control.

Q. 6. What is the permissible % of modulation for A M and F M stations? (R & R 73.55)

A. The percentage of modulation should be maintained as high as possible consistent with good quality of transmission and in no case less than 85% on peaks nor more than 100% on negative peaks of frequent recurrence during any selection which is transmitted at the highest level of the program under consideration.

Q. 7. What is the permissible frequency tolerance of standard broadcast stations? (R&R 73.59) of FM stations? (R&R 3.269)

A. The operating frequency of each AM broadcast station should be maintained within 20 cycles of the assigned frequency. The center frequency of each FM broadcast station should be maintained within 2000 cycles of the assigned center frequency.

Q. 8. What stations may be operated by a third class broadcast operator? (AM-73.93(b)) (FM-73.265(b))

A. A third class broadcast operator may operate: (1) AM stations with a power of 10 kilowatts or less and utilizing a non-directional antenna and (2) FM stations with a transmitter power output of 25 kilowatts or less - provided, that a supervisory operator holding a Radiotelephone first-class operator's license is employed either on a full time basis or under contract for part time work at the station.

The third class broadcast operator must have his permit endorsed for broadcast station operation in order to operate the above type stations.

Q. 9. What are the power limitations on broadcast stations? (R & R 73.57)

A. The operating power of each station shall be maintained as near as practicable to the licensed power and shall not exceed the limits of 5 percent above and 10 percent below the licensed power, except that in an emergency when due to causes beyond control of the licensee it becomes impossible to operate with full licensed power, the station may be operated with reduced power for a period not to exceed 10 days, provided the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified immediately after the emergency develops and also upon the resumption of licensed power.

Q. 10. What logs must be kept by broadcast stations according to the Rules and Regulations of the FCC? (R & R 73.111)

A. The licensee or permittee of each standard broadcast station shall maintain program, operating, and maintenance logs. The logs shall be kept in an orderly and legible manner, in suitable form, and in such detail that the data required for the particular class of station concerned is readily available. Time entries shall be either in local standard or daylight saving time and shall be indicated accordingly.

Q. 11. Who keeps the logs? (R & R 73.111)

A. Each log is kept by the person or persons competent to do so, having actual knowledge of the facts required. This person signs the appropriate log when starting duty and again when going off duty.

Q. 12. What entries are made in the program log? (R & R 73.112) In the operating log? (R & R 73.113)

A. The following entries shall be made in the program log: (1) An entry of the time each station identification announcement (call letters and location) is made. (2) An entry briefly describing each program broadcast, such as "music", "drama", "speech", etc., together with the name or title thereof, and the sponsor's name, with the time of the beginning and ending of the complete program. If a mechanical record is used, the entry shall show the exact nature thereof, such as "record", "transcription", etc., and the time it is announced as a mechanical record. If a speech is made by a political candidate, the name and political affiliations of such speaker shall be entered. (3) An entry showing that each sponsored program broadcast has been announced as sponsored, paid for, or furnished by the sponsor. (4) An entry showing for each program of network origin, the name of the network originating the program.

No provision of this section shall be construed as prohibiting the recording or other automatic maintenance of data required for program logs. However, where such automatic logging is used, the licensee must comply with the following requirements: (1) The licensee, whether employing manual or automatic logging or a combination thereof, must be able to accurately furnish the commission with all information required to be logged; (2) Each recording, tape, or other means employed shall be accompanied by a certificate of the operator or other responsible person on duty at the time or other duly authorized agent of the licensee, to the effect that it accurately reflects what was actually broadcast. Any information required to be logged which cannot be incorporated in the automatic process shall be maintained in a separate record which shall be similarly authenticated; (3) The licensee shall extract any required information from the recording for the days specified by the Commission or its duly authorized representative and submit it in written log form, together with the underlying recording, tape or other means employed.

The following entries shall be made in the operating log: (1) An entry of the time the station begins to supply power to the antenna and the time it stops. (2) An entry of each interruption of the carrier wave, where restoration is not automatic, its cause and duration followed by the signature of the person restoring operation (if licensed operator other then the licensed operator on duty). (3) An entry, at the beginning of operation and at intervals not exceeding one-half hour, of the following (actual readings observed prior to making any adjustments to the equipment) and, when appropriate, an indication of corrections made to restore parameters to normal operating values: (i) Operating constants of last radio stage (total plate voltage and plate current). (ii) Antenna current or common point current (if directional) without modulation. (iii) Frequency monitor reading. (4) An entry each day of the following where applicable: (i) Antenna base current(s) without modulation for each mode of operation: (a) Where remote antenna meters or a remote common point meter are normally employed but are defective. (b) Where required by the station license for directional antenna operation. (ii) Where there is remote control operation of a directional antenna station, readings for each pattern taken at the transmitter (within two hours of commencement of operation with each pattern) of: (a) Common point current without modulation. (b) Base current(s) without modulation. (c) Phase monitor sample loop current(s) without modulation. (d) Phase indications. (5) Any other entries required by the instrument of authorization or the provisions of this part. (b)

Automatic devices accurately calibrated and with appropriate time, date and circuit functions may be utilized to record the entries in the operating log: Provided, That: (1) They do not affect the operation of circuits or accuracy of indicating instruments of the equipment being recorded: (2) The recording devices have an accuracy equivalent to the accuracy of the indicating instruments; (3) The calibration is checked against the original indicators at least once a week and the results noted in the maintenance log; (4) Provision is made to actuate automatically an aural alarm circuit located near the operator on duty if any of the automatic log readings are not within the tolerances or other requirements specified in the rules or instrument of authorization; (5) Devices which record each parameter in sequence must read each parameter at least once during each 10-minute period and clearly indicate the parameter being recorded; (6) The automatic logging equipment is located at the remote control point if the transmitter is remotely controlled, or at the transmitter location if the transmitter is manually controlled; (7) The automatic logging equipment is located in the near vicinity of the operator on duty and is inspected by him periodically during the broadcast day; and (8) The indicating equipment conforms with the requirements of Sec. 3.39 except that the scales need not exceed 2 inches in length and arbitrary scales may not be used.

Q. 13. When may abbreviations be used in the station's logs? (R & R 73.111)

A. Abbreviations may be used if proper meaning or explanation is contained elsewhere in the log.

Q. 14. How and by whom may station's logs be corrected? (R & R 73.111)

A. Any necessary correction to a station's logs may be made only by the person originating the entry. He must strike out the erroneous portion, initial the correction made, and indicate the date of correction.

Q. 15. According to the Rules and Regulations of the FCC, how long must station logs be retained? (R & R 73.115)

A. Logs of standard broadcast stations shall be retained by the licensee or permittee for a period of two years: Provided, however, That logs involving communications incident to a disaster or which include communications incident to or involved in an investigation by the Commission and concerning which the licensee or permittee has been notified, shall be retained by the licensee or permittee until he is specifically authorized in writing by the Commission to destroy them: Provided, further, That logs incident to or involved in any claim or complaint of which the licensee or permittee has notice, shall be retained by the licensee or permittee until such claim or complaint has been fully satisfied, or until the same has been barred by statute limiting the time for the filing of suits upon such claims.

Q. 16. What information must be given to an FCC inspector at any reasonable hour? (R & R 73.116)

A. The following shall be made available upon request by an authorized representative of the FCC: (a) Program, operating and maintenance logs. (b) Equipment performance measurements required by Sec. 3.47. (c) Copy of most recent antenna resistance or common-point impedance measurements submitted to the Commission. (d) Copy of most recent field intensity measurements to establish performance of directional antennas required by Sec. 73.151.

Q. 17. What is included in a station identification and how often is it given? (R & R 73.117)

A. (a) Station identification shall consist of the call letters and location of the station. The identification announcement must be made at the beginning and ending of each time of operation and during operation (1) on the hour and (2) either on the half hour or at the quarter hour following the hour and at the quarter hour preceding the next hour: Provided, (b) Such identification announcement need not be made on the hour when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or operatic production of longer duration than 30 minutes. In such cases, the identification announcement shall be made at the beginning of the program, at the first interruption of the entertainment continuity, and at the conclusion of the program. (c) Such identification announcement need not be made on the half hour or quarter hours when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or operatic production. In such cases, an identification announcement shall be made at the first interruption of the entertainment continuity and at the conclusion of the program: Provided, That an announcement within 5 minutes of the times specified in paragraph (a) (2) of this section will satisfy the requirements of identification announcements. (d)

In the case of variety show programs, baseball game broadcasts, or similar programs of longer duration than 30 minutes, the identification announcement shall be made within 5 minutes of the hour and of the times specified in paragraph (a) (2) of this section. (e) In the case of all other programs, the identification announcement shall be made within 2 minutes of the hour and of the times specified in paragraph (a) (2) of this section.

Q. 18. What should an operator do if the modulation monitor becomes defective? (R & R 73.56)

A. In the event that the modulation monitor becomes defective the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: Provided, That: (1) Appropriate entries shall be made in the maintenance log of the station showing the date and time the monitor was removed from and restored to service. (2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement monitor has been installed and is functioning properly. (3) The degree of modulation of the station shall be monitored with a cathode ray oscilloscope or other acceptable means.

Q. 19. What should an operator do if the frequency monitor meter becomes defective? (R & R 73.252)

A. In the event that the frequency monitor becomes defective, the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: Provided, That: (1) Appropriate entries shall be made in the maintenance log of the station showing the date and time the monitor was removed from and restored to service. (2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement monitor has been installed and is functioning properly. (3) The frequency of the station shall be compared with an external frequency source of known accuracy at sufficiently frequent intervals to insure that the frequency is maintained within the tolerance prescribed in Sec. 3.269. An entry shall be made in the station log as to the method used and the results thereof. (c) If conditions beyond the control of the licensee prevent the restoration of the monitor to service within the above allowed period, informal request in accordance with Sec. 1.337 of this chapter may be filed with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

Q. 20. When should minor corrections to the transmitter be made? Before or after logging the meter readings? (R&R 73.113)

A. Minor corrections to the transmitter should be made after logging the meter readings.

Q. 21. Should the sponsor's name ever be omitted when reading commercials on the air? (R & R 73.119)

A. No.

Q. 22. When should an operator announce a program as "recorded"? (R & R 73.118)

A. Except for programs of one minute or less duration, an announcement, at the beginning or end of every mechanically reproduced program to the effect that the program is mechanically reproduced, must be made. This includes all programs where the element of time is such that the listener might think that the program is being broadcast at the very same time that the program or event is actually occurring.

Q. 23. How often should the tower lights be checked for proper operation? (R & R 17.37)

A. The licensee of any radio station which has an antenna structure requiring illumination shall make an observation of the tower lights at least once each 24 hours either visually or by observing an automatic and properly maintained indicator designed to register any failure of such lights.

Q. 24. What record is kept of tower light operation? (R & R 17.38)

A. The licensee of any radio station which has an antenna structure requiring illumination shall make the following entries in the station record of the inspections. (a) The time the tower lights are turned on and off each day if manually controlled; (b) The time the daily check of proper operation of the tower lights was made, if automatic alarm system is not provided; (c) In the event of any observed or otherwise known failure of a tower light:

(1) Nature of such failure. (2) Date and time the failure was observed, or otherwise noted. (3) Date, time, and nature of the adjustments, repairs, or replacements made. (4) Identification of Air Traffic Communication Station (Federal Aviation Agency) notified of the failure of any code or rotating beacon light or top light not corrected within 30 minutes, and the date and time such notice was given. (5) Date and time notice was given to the Air Traffic Communication Station (Federal Aviation Agency) that the required illumination was resumed. (d) Upon completion of the periodic inspection required at least once each three months: (1) The date of the inspection and the condition of all tower lights and associated tower lighting control devices, indicators and alarm systems. (2) Any adjustments, replacements, or repairs made to insure compliance with the lighting requirements and the date such adjustments, replacements, or repairs were made.

Q. 25. What should an operator do if the tower lights fail? (R & R 17.37)

A. If the tower lights fail, the operator shall report immediately by telephone or telegraph to the nearest Airways Communication Station or office of the Federal Aviation Agency any observed or otherwise known failure of a code or rotating beacon light, or top light not corrected within thirty minutes, regardless of the cause of such failure. Further notification by telephone or telegraph shall be given immediately upon resumption of the required illumination.

Q. 26. What is E B S? (R & R 73.911)

A. E B S stands for Emergency Broadcast System. The Emergency Broadcast System consists of broadcast stations and interconnecting facilities which have been authorized by the Commission to operate in a controlled manner during a war, threat of war, state of public peril or disaster, or other national emergency.

Q. 27. What is an Emergency Action Condition? (R&R 73.915)

A. An Emergency Action Condition is the condition which exists after the transmission of an Emergency Action Notification and before the transmission of the Emergency Action Termination.

Q. 28. What equipment must be installed in broadcast stations in regard to reception of an Emergency Action Notification? (R & R 73.922)

A. All broadcast station licensees must install, unless specifically exempt, the necessary equipment to receive Emergency Action Notifications or Terminations by means of reception of radio broadcast messages, and must maintain this equipment in a state of readiness for reception, including arrangements for human listening watch or automatic alarm devices, or both. Such equipment shall have its termination at the transmitter control point.

Q. 29. How often should E B S test transmissions be sent? During what time period are they sent? (R & R 73.951)

A. E B S test transmissions must be sent once each week on an unscheduled basis between the hours of 8:30 A.M. and local sunset.

Q. 30. During a period of an Emergency Action Condition what should all non-participating stations do? (R & R 73.923(a))

A. Non-participating stations must observe radio silence.

Q. 31. If the tower lights of a station are required to be controlled by a light-sensitive device, and this device malfunctions, when should the tower lights be "on"? (R & R 17.25(a)(3))

A. If the light sensitive device malfunctions, the tower lights should be on at all times.

FCC-TYPE EXAMINATION
ELEMENT 1

1. A response to a Notice of Violation must be made within:
   a. 10 days
   b. 24 hours
   c. 3 days
   d. 30 days

2. After receipt of a Notification of Suspension, the suspension order becomes effective within:
   a. 24 hours
   b. 30 days
   c. 3 days
   d. 15 days

3. The urgency signal is second in priority to:
   a. Communications relative to direction-finding bearings
   b. Communications preceded by a safety signal
   c. Distress calls, distress messages, and distress traffic
   d. Important international commerce bulletins

4. Corrections in the radio log may be made by:
   a. An operator licensed by the FCC
   b. The person who made the initial entry
   c. A notary public
   d. A person familiar with the operation of the installation

5. Radio stations are subject to inspection by:
   a. Any federal agency
   b. The Federal Bureau of Investigation
   c. The Federal Communications Commission
   d. The Federal Radio and Wire Authority

6. An application for renewal of a radio operator's license may be made:
   a. 15 months before expiration of the current license
   b. Within a year of expiration of the current license
   c. At all times, if there have been no violations
   d. Within 15 days of issuance of the original license

7. The secrecy provisions of the law do not apply to:
   a. Commercial bulletins
   b. Danish bulletins
   c. Holders of 1st Class Radiotelephone Operator's Licenses
   d. Distress messages

8. A response to a Notice of Violation must be addressed to:
    a. Any office of the Federal Communications Commission
    b. Any police authority of the continental United States
    c. The office of the FCC that originated the official notice
    d. The nearest Federal District Court

9. A person who has received an order of suspension may:
    a. Disregard the violation if he feels it to be unjust
    b. Request a hearing
    c. Order a court injunction on the FCC office
    d. Operate with an input power of less than 1 kilowatt

10. False signals of distress are:
    a. Allowed only if very low power is used
    b. Prohibited by law
    c. Common practical jokes among experienced operators
    d. Good tests of rescue facilities

11. Applicants for FCC licenses must generally be:
    a. Citizens of the United States only
    b. Citizens of the United States and Canada only
    c. Citizens of any country, provided they have held a radio operator's license of their respective country
    d. Citizens of English speaking countries

12. The usual license term for a radio operator is:
    a. one year c. three years
    b. two years d. five years

13. The second class radiotelephone license of a radio operator who qualifies for a first class license is:
    a. Kept in force for a period of one year
    b. Automatically cancelled
    c. Kept in force as long as the first class license is valid
    d. Kept in force for a period of two years

14. An operator who loses a license must:
    a. Not operate until he receives a duplicate
    b. Notify the FCC within 15 days
    c. Exhibit a copy of his application for a duplicate license while continuing to operate the station pending receipt of the duplicate license.
    d. Notify (within 10 days) the field office that issued the orginal license

15. Which of the following need not be done in correcting an error in a log:
    a. Indicate date of correction
    b. Indicate time of correction
    c. Initial the correction
    d. Strike out erroneous portion

16. Unidentified or superfluous radio communications may:
    a. Be transmitted on frequencies above 30 Mc.
    b. Not be transmitted at all
    c. Be transmitted on frequencies that are not used for distress, urgent or safety signals.
    d. None of the above

17. A person who willfully violates a provision of the Communications Act of 1934 faces a penalty of:
    a. Not more than $500 fine
    b. Not more than $10, 000 fine
    c. Not more than $10, 000 fine and imprisonment for a term not exceeding one year
    d. Not more than $5, 000 fine and imprisonment for a term not exceeding two years

18. Any person who knowingly violates a rule made by the Federal Communications Commission, shall, in addition to other penalties provided by law, receive a fine of not more than:
    a. $500 for each day during which the offense occurs
    b. $1000 for each day during which the offense occurs
    c. $50 for each day during which the offense occurs
    d. None of the above

19. A licensee who receives a notice that he has violated an FCC rule, must:
    a. Send a written answer to the FCC in Washington, D. C. within 10 days.
    b. Send a written answer to the FCC in Washington, D. C. within 15 days
    c. Send a written answer to the FCC office originating the notice within 10 days.
    d. Send a written answer to the FCC office originating the notice within 15 days.

20. The FCC may not suspend an operator license upon proof that the licensee:

a. Has failed to carry out a lawful order of the master of the ship on which he is employed.
b. Has transmitted superfluous radio communications
c. Has assisted another to obtain an operator's license by fraudulent means
d. None of the above

FCC-TYPE EXAMINATION

ELEMENT 2—SERIES "O"

1. The word "OVER" indicates:
   a. The conclusion of a series of transmissions
   b. The station is leaving the air temporarily
   c. The transmission is over and no response is expected
   d. The transmission is over and a reply is expected

2. The system of substituting words for corresponding letters is known as:
   a. The Dewey system
   b. The substitute transmission method
   c. The phonetic system
   d. The safety-sending method

3. The word "OUT" means:
   a. The station is being interfered with
   b. The station is leaving the air
   c. The transmission is ended and a response is expected.
   d. The transmission is concluded and no response is expected.

4. Shouting into a microphone may cause:
   a. Deattenuation
   b. Amplification
   c. Rectification
   d. Overmodulation

5. When speaking into a microphone in a noisy location, it is good practice to:
   a. Shield the microphone with the hands
   b. Shout directly into the microphone
   c. Turn down the audio gain control
   d. Speak very softly

6. Unnecessary calling should be avoided since it may cause:
   a. Overmodulation
   b. Interference with other stations
   c. Electro-magnetic decoupling
   d. Antenna wear

7. In radiotelephony, the words "READ BACK" mean:
   a. I am repeating my previous transmission
   b. This transmission is being read
   c. Repeat the entire message back to me exactly as you have received it
   d. This is a "copied" transmission, not an original reading.

8. A separation between portions of a single transmission should be indicated by inserting the word:
   a. SEPARATE
   b. STOP
   c. BREAK
   d. SECURITY

9. The licensed operator of a ship's radiotelephone station exhibits his authority to operate by:
   a. Wearing a lapel pin with his registration number
   b. Printing circulars with his qualifications stated plainly
   c. Demonstrating proficiency in reception of American Morse Code
   d. Posting his license conspicuously at the principal location of the station

10. All calling should be:
   a. Lengthy and detailed
   b. Done on working frequencies
   c. Clear and concise
   d. Repeated several times

11. When voice transmissions are not being made, the transmitter should be:
   a. Dismantled
   b. Moved away from windows, air vents, etc.
   c. Kept on the air
   d. Kept off the air

12. If an operator is told that his voice is distorting, he should:
   a. Speak more softly or back away from the microphone
   b. Report the insult to the FCC
   c. Dismantle the modulator immediately
   d. Use A1 emission promptly

13. An operator will find specifications for obstruction marking and lighting for antenna towers in:
   a. The Communications Act of 1934
   b. Part 17 of the FCC Rules and Regulations
   c. The Geneva Radio Regulations of 1934
   d. The bulletins issued by the nearest FCC office

14. In the event of an emergency, an operator may:
    a. Increase his power in excess of the amount specified in the instrument of authorization
    b. Utilize his station in a manner other than that specified in the instrument of authorization
    c. Not utilize his station at all
    d. Transmit on frequencies other than those specified in the instrument of authorization
15. When a person other than the licensed operator speaks into a microphone, responsibility for proper operation of the station is borne by:
    a. The owner of the station
    b. The licensed operator in charge of the station
    c. The person himself, provided he is over 21 years of age
    d. The person himself, provided he is over 18 years of age

16. In radiotelephone communications, a common expression "Repeat" means:
    a. Speak slower
    b. Say again
    c. Repeat twice
    d. Use the phonetic alphabet

17. An operator who leaves his station unattended in a public place:
    a. Is not responsible for the transmitter when he is not present
    b. Must make it inaccessible to unauthorized persons
    c. Must always leave another licensed operator with the transmitter during daytime hours
    d. Must turn the transmitter off

18. An operator who hears profanity being used at his station need not:
    a. End the transmission
    b. Enter relevant details into the log
    c. Repeat the incident to the FCC
    d. Personally order a citizens arrest of the person uttering the profanity.

19. The word "Clear" when used in radiotelephone indicates that:
    a. The transmission is completed and no response is expected
    b. The immediately preceding message has been received and is completely understood
    c. The transmission is completed and a response is expected
    d. The next message has nothing to do with the previous message.

20. In testing a radiotelephone transmitter, an operator should not:
    - a. Clearly indicate that he is testing
    - b. Give the station call sign
    - c. Interfere with other communications
    - d. Test for as short a time as possible

FCC-TYPE EXAMINATION

ELEMENT 2—SERIES "M"

1. The Radiotelephone distress signal is indicated by the word:
   a. Distress
   b. S.O.S.
   c. Attention
   d. Mayday

2. The spoken word "PAN" is the:
   a. Security signal
   b. Invitation to transmit
   c. Symbol for Pan American Navigation stations
   d. Urgent signal

3. A distress message should NOT include:
   a. The name of the vessel
   b. The name of the operator on duty
   c. The nature of the distress
   d. The position of the vessel

4. The safety signal consists of the word:
   a. Attention
   b. Security
   c. Danger
   d. Safety

5. A safety message consists of:
   a. Information concerning the safety of navigation
   b. Information concerning radio maintenance
   c. Standard hints for maintaining on-the-air safety
   d. Tests for checking the safety of radar units

6. The safety signal has priority over:
   a. The distress signal
   b. Communications relative to direction-finding bearings
   c. Communications preceded by an urgent signal
   d. Distress traffic

7. A mobile radio station may send a distress message for another mobile station in distress if:
   a. The station in distress is not capable of sending one itself.
   b. Weather conditions appear to be deteriorating
   c. There is a risk of loss of life
   d. Many Coast Guard cutters appear to be rushing to the scene.

8. In the case of a mobile radio station in distress, responsibility for the control of distress traffic is upon:
   a. All stations in the area
   b. The station in distress, or any station that it may delegate such power to
   c. The most powerful station in the area
   d. All stations outside of the continental limits of the U.S.

9. The signal with lowest priority is:
   a. The general communication call
   b. The distress signal
   c. The security signal
   d. The urgency signal

10. Stations using a shared frequency should:
    a. Limit transmissions to 3 minutes in duration
    b. Never operate at night
    c. Keep the power level high at all times
    d. Leave an interval between calls

11. Before making a call on the calling frequency, it is good operating practice to:
    a. Test the transmitter on the calling frequency
    b. Listen on the working frequency that is to be used later
    c. Check for intermittent parasitic oscillations
    d. Issue a vague distress message

12. The international calling frequency of the maritime mobile service is:
    a. 14 megacycles
    b. 14.2 megacycles
    c. 2182 kilocycles
    d. 2182 megacycles

13. No charge is made for messages relating to:
    a. Birthday greetings
    b. News bulletins
    c. Distress traffic
    d. Personal messages

14. Upon hearing the word "SECURITY" repeated 3 times, an operator must:
    a. Call the station
    b. Attempt to jam the frequency
    c. Continue listening on the frequency until the message is over
    d. Try to attract the attention of all stations in the vicinity

15. The shipboard radiotelephone station should be tested by:
    a. Noticing the color of the chassis during operation
    b. Transmitting a random text of 5 minutes duration
    c. Transmitting the official call sign followed by the word "TEST"
    d. Transmitting the appropriate Coast Guard call letters

16. In acknowledging a distress call, care should be taken so that the acknowledgment:
    a. Is not received by the distressed vessel
    b. Is not picked up by foreign ships
    c. Does not imply that the distress message has been received
    d. Does not interfere with acknowledgments of other acknowledgments from vessels better able to assist

17. Calling frequencies should be used for:
    a. All personal messages
    b. Normal exchange of prolonged messages
    c. All transmitter tests
    d. Safety messages

18. The spoken word "MAYDAY" repeated 3 times is the:
    a. Official radio call of Russia
    b. International radiotelephone distress signal
    c. Equivalent of "N. J. Z."
    d. Foreign testing signal

19. Intervals between calls on a shared frequency:
    a. Waste valuable air time
    b. Permit other stations to carry on communications
    c. Confuse monitoring stations
    d. Are prohibited by law

20. Before transmitting on a shared frequency, an operator should:
    a. Listen to insure that he is not interfering with already-established communication
    b. Increase his power, to make sure that his message will be received
    c. Disconnect his receiver
    d. Call the other stations sharing the frequency, to make sure that they do not intend to transmit while he is transmitting.

FCC-TYPE EXAMINATION
ELEMENT 9

1. The percentage of modulation on negative peaks of frequent recurrence must not be more than:
   a. 50% c. 85%
   b. 75% d. 100%

2. 18 milliamperes is equal to:
   a. 18000 amperes c. 1.8 amperes
   b. .018 amperes d. .18 amperes

3. Which of the following may not be operated by a third class broadcast operator?
   a. A 25 KW AM station using a non-directional antenna
   b. A 5 KW AM station using a non-directional antenna
   c. A 20 KW FM station
   d. A 10 KW FM station

4. Abbreviations may be used in a log:
   a. Only if the operator holds a first class radiotelephone license
   b. Only if they are approved FCC-type abbreviations
   c. If proper meaning or explanation is given elsewhere in the log
   d. Abbreviations may not be used in a log.

5. Corrections in a log may be made:
   a. Only by the person originating the entry
   b. By persons competent to do so, having actual knowledge of the facts
   c. Only by the person in charge of the station
   d. Corrections may not be made in a log

6. Station logs must be retained for a period of:
   a. 1 year c. 3 years
   b. 2 years d. 5 years

7. Logs pertaining to communications involving a disaster must be retained for a period of:
   a. 2 years c. 5 years
   b. 3 years d. until authorized by the FCC to destroy them

8. The following must be included in a station identification:
    a. Call letters and location
    b. Call letters
    c. Call letters, location and time
    d. Call letters and time

9. In general, station identification must be made:
    a. At the beginning and end of each time of operation
    b. Every 15 minutes
    c. Every 30 minutes
    d. At the beginning and end of each time of operation and, during operation, on the hour and other specific half hour intervals.

10. The Standard Broadcast Band refers to the band of frequencies between:
    a. 600 kc. to 1600 kc.
    b. 535 kc. to 1605 kc.
    c. 88 Mc. to 108 Mc.
    d. 550 kc. to 1700 kc.

11. An announcer must indicate that a recorded program is in fact recorded:
    a. If the program lasts at least one half minute
    b. Even if it is obvious to all that the program is recorded
    c. If the recording is of 10 minutes duration and the event actually took place within the hour
    d. An announcer need not indicate the fact that a particular program is recorded

12. E B S stands for:
    a. Emergency Broadcast System
    b. Energy Broadband System
    c. Electronic Broadcast Service
    d. None of the above

13. E B S test transmissions should be sent at least:
    a. Once a week
    b. Once a month
    c. Once each day
    d. Twice a week

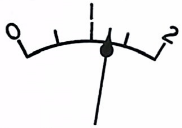
14. During a period of an Emergency Action Condition, non-participating stations:
    a. Must continue their usual activity
    b. Must observe radio silence
    c. Must monitor specific stations
    d. Must keep their carriers on but stop modulation

15. Tower lights shall be checked:
    - a. At least once each week
    - b. At the beginning and end of each days activities
    - c. At exactly one hour after sunset
    - d. At least once each day

16. If the tower lights fail, the operator must immediately notify the nearest:
    - a. Airways Communications Station
    - b. F.C.C. office
    - c. Civil Air Patrol office
    - d. E B S station

17. The operating power of each station must not exceed the limits of:
    - a. 10% above and 5% below the licensed power
    - b. 5% above and 5% below the licensed power
    - c. 10% above and 10% below the licensed power
    - d. 5% above and 10% below the licensed power

18. The meter reads:
    - a. 1.50
    - b. .75
    - c. 1.25
    - d. 1.75



19. In making a log correction, the erroneous portion must be struck out, the corrections made and:
    - a. The correction must be initialed
    - b. The correction must be initialed and the date of correction must be entered
    - c. The bottom of each page where corrections are made must be signed by the operator making the corrections
    - d. Slight corrections need not be initialed

20. In the event of a malfunction of a part of the remote control equipment, the licensee:
    - a. Must notify the nearest FCC office
    - b. May operate for a period of 24 hours while repairs are being made
    - c. Must cease operation by remote control
    - d. None of the above

ANSWERS TO
FCC-TYPE EXAMINATIONS

ELEMENT 1

1. A
2. D
3. C
4. B
5. C
6. B
7. D
8. C
9. B
10. B
11. A
12. D
13. B
14. C
15. B
16. B
17. C
18. A
19. C
20. D

ELEMENT 2—SERIES "O"

1. D
2. C
3. D
4. D
5. A
6. B
7. C
8. C
9. D
10. C
11. D
12. A
13. B
14. B
15. B
16. B
17. B
18. D
19. A
20. C

ELEMENT 2—SERIES "M"

1. D
2. D
3. B
4. B
5. A
6. B
7. A
8. B
9. A
10. D
11. B
12. C
13. C
14. C
15. C
16. D
17. D
18. B
19. B
20. A

ELEMENT 9

1. D
2. B
3. A
4. C
5. A
6. B
7. D
8. A
9. D
10. B
11. C
12. A
13. A
14. B
15. D
16. A
17. D
18. C
19. B
20. C

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